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Ans:
Inaugural Dissertation
on

Angina Pectoris.

For the degree

of

Doctor of Medicine,

In the

University of Pennsylvania.

Read March 4

1829

By William L. Hays
of
Pennsylvania.

January 30th.

1829.

Insufficiently good on a very abstract subject

[Faint, illegible handwriting on lined paper]

Angina Pectoris.

To the disease which I am about to describe, Dr. Hæb-
den in 1768 gave the name of Angina Pectoris; and so
far as I can ascertain, was the first writer who gave
any regular account of it. Since his publication, how-
ever, it has occupied a considerable share of the atten-
tion of medical writers, and has been described by
them under a variety of names: thus by Dr. Sæwini,
it has been called *asthma dolorificum*; by Dr. Puz,
syncope anginosa; by M. Laennec, *neuralgia of the*
heart; and by Dr. Ford it is called *stenalgia*.

Writers on this disease tell us that it is generally
connected with a full habit of body, and an accu-
mulation of fat about the heart. It is also said to
attack men more frequently than women, especially
those of a corpulent or arthritic habit, and who lead
sedentary and inactive lives. It is sometimes met
with in persons under the age of twenty, though
rarely before that of forty years.

Causes. Cold, mental emotions, dyspepsia, and the suppression of accustomed discharges, seem to predispose to this disease.

The primary attacks are generally excited by ascending a flight of stairs, or an eminence, or by walking at a quick pace, or running, or by a full meal. Subsequently, however, they are brought on by slighter causes; as a slight emotion of the mind, walking, coughing, sneezing, or straining at stool, and sometimes, indeed, they occur without any obvious cause, when the patient is sitting or lying still.

Symptoms. The patient is seized with pain and uneasiness about the chest which is so acute as to make him immediately stand still, and even to give apprehensions of immediate death. The pain is referred to the lower end of the sternum, a little to the left side of it; shooting thence across the breast to the left arm, and seeming to terminate at the insertion of the deltoid muscle, though in some cases it extends to the end

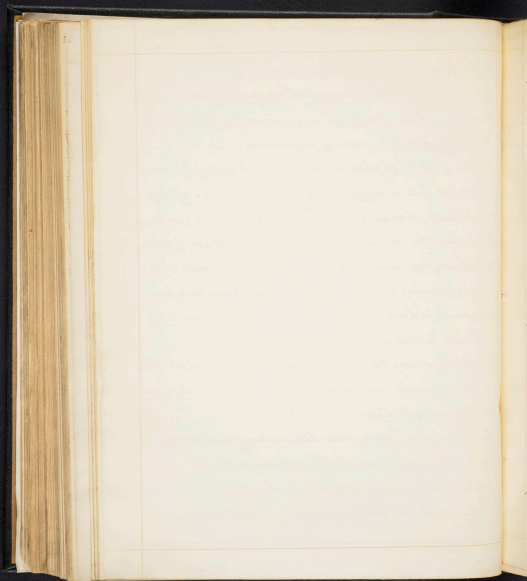
of the fingers. In some cases the right arm is affected, and in some rare instances, both arms are affected simultaneously. These pains are accompanied with difficulty of breathing and a sense of suffocation.

In the first, or slighter attacks of the disease, the paroxysms last but a few minutes, and generally go off by the patient standing still, or turning from the wind; but when the disease has existed for a length of time, the paroxysms increase in violence, frequency and duration; continuing sometimes for half an hour, and are even said to have lasted several days; the patient being pale, and bathed in a cold sweat.

The pulse during the paroxysm is sometimes but little changed, but in most cases it sinks and becomes weak, irregular, or intermitting.

The stomach in some cases becomes very irritable, rejecting nearly every thing that is taken into it.

After having suffered, more or less frequently, for an indefinite length of time, the patient dies suddenly,



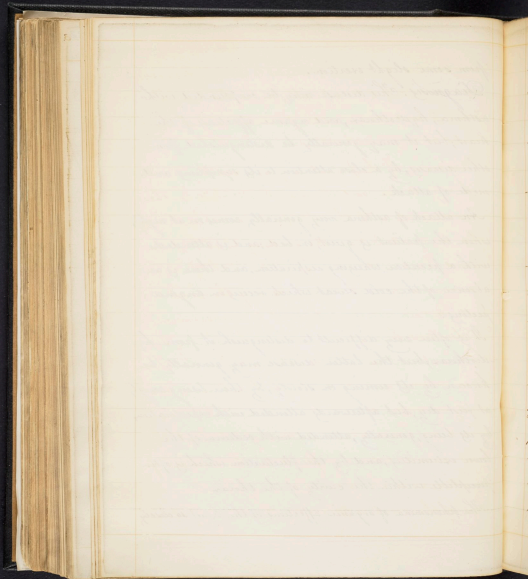
from some slight exertion.

Diagnosis. This disease may be confounded with asthma, hydropothorax, and organic affectings of the heart; but it may generally be distinguished from other diseases, by a close attention to its symptoms and mode of attack.

An attack of asthma very generally comes on at night, when the patient is quiet, in bed; and is attended with a peculiar wheezing aspiration, and there is an absence of the cold sweat which occurs in angina pectoris.

It is often very difficult to distinguish it from hydropothorax, but the latter disease may generally be known by its coming on slowly, by there being cough at first dry, but afterwards attended with expectoration, by its being generally attended with oedema of the lower extremities, and by the fluctuation which is often perceptible within the cavity of the thorax.

The phenomena of organic affectings of the heart so closely



resemble those of angina pectoris, as to render a diagnosis very difficult, if not impossible; nor is this a matter of much importance, as the treatment in both cases should be very nearly the same.

Prognosis. If the patient is young, and the constitution a good one, and the disease attacked in the commencement with the appropriate remedies, it may often be cured; but on the contrary, if it has continued long, and more especially if the patient is advanced in life, organic lesion of the heart is a pretty certain effect, and death the consequence.

Dissections have shown various phenomena. In some instances no morbid appearances in the thoracic viscera could be perceived, though in a majority of cases, considerable alterations have been found; as large accumulations of fat about the heart, accumulations of fluid in the cavities of the pleurae, or the pericardium, ossification of some of the great vessels, or of the coronary arteries,

The first thing I noticed when I stepped
 out of the train was the cold. It was a
 sharp contrast to the warmth of the
 car. I shivered as I walked towards
 the platform. The air was thick with
 the smell of coal and the sound of
 the train. I looked up at the sky
 and saw the stars. They were so
 bright and clear. I had never seen
 them before. I felt a sense of wonder
 and awe. The world was so big and
 so full of things I had never seen
 before. I felt like a small child in a
 vast, new world. I took a deep
 breath and felt the cold air fill my
 lungs. I knew that this was the
 beginning of something new. I was
 about to embark on a journey that
 would change my life. I felt a sense
 of excitement and anticipation. I was
 ready to face whatever came my way.

hypertrophy, dilatation, or mollescence of the heart.
Numerous accounts of post mortem appearances
have been published; some of which I shall mention.
(Most of the following extracts, are from Johnsons Med-
ico-Chirurgical Review.)

Mr. Wright of Hampstead, aged 58, died with the usual
symptoms of angina pectoris, to which he had been sub-
ject for eighteen months, during which time he was
attended by Dr. Johnson, who states that during the
life of the patient he could detect no organic
lesion within the chest, either by percussion or the
Aethioscope: that "on dissection, the lungs were obs-
erved to be perfectly sound. No water of any consequence
was found, either in the bags of the pleurae or the
cavity of the pericardium. The heart was of the usu-
al size, but much covered with fat. Its muscular
structure was pale, flabby, and so lacerable as to
be easily masked between the fingers, like wetted
paper or putrid meat. There was no disease of the

valves, nor of any of the large vessels issuing from the heart. The parietes of the ventricles were rather attenuated as well as softened."

Mr. Cook in his treatise on the digestive organs, gives the case of an *Eper. mallester* aged 65, who died with the usual symptoms of this disease, which had been preceded for several years, by "flatulency and constipation". On dissection, "the spleen was found three or four times the natural size; there was some appearance of inflammation and thickening in the mucous membrane of the stomach; lungs healthy; an ounce of bloody serum in the pericardium; heart remarkably flaccid, and easily lacerable; but in no case had a spification taken place".

Mr. Cook observes that he has seen other cases, where the pathological characters were the same.

In the case of a lady, read by Dr. Warren before the College of Physicians, the appearances

The first of these is the
 fact that the human mind
 is not a blank slate, but
 is filled with ideas and
 feelings from birth. This
 is the basis of all human
 knowledge and experience.
 The second is the fact
 that the human mind is
 capable of learning and
 growth. This is the basis
 of all human progress and
 achievement. The third is
 the fact that the human
 mind is capable of feeling
 and emotion. This is the
 basis of all human love
 and compassion. The fourth
 is the fact that the human
 mind is capable of reason
 and logic. This is the basis
 of all human science and
 philosophy. The fifth is the
 fact that the human mind
 is capable of imagination
 and creativity. This is the
 basis of all human art and
 literature. The sixth is the
 fact that the human mind
 is capable of self-reflection
 and introspection. This is
 the basis of all human
 morality and ethics. The
 seventh is the fact that the
 human mind is capable of
 communication and social
 interaction. This is the basis
 of all human culture and
 society. The eighth is the
 fact that the human mind
 is capable of change and
 adaptation. This is the basis
 of all human survival and
 success. The ninth is the
 fact that the human mind
 is capable of hope and
 optimism. This is the basis
 of all human faith and
 belief. The tenth is the
 fact that the human mind
 is capable of love and
 compassion. This is the basis
 of all human happiness and
 well-being.

on dissection were; "no fluid in the cavity of the pleura, - a small quantity in the pericardium, - lungs sound, - heart free from disease, - at the highest point of the arch of the aorta was an ossification about the size of a shilling, - a small ossified portion was also found at the bifurcation of the vessel." she had laboured under the disease for ten or twelve weeks, and died suddenly, on turning in bed. She had previously enjoyed good health.

The late Mr. Laennec says (in Forbes translation) "I have examined several subjects who had laboured under this disease, and in whom there co-existed either hypertrophy or dilatation of the heart; and in none of these did I find ossification of the coronary arteries".

Dr. Horner informs me that, some time since he examined the body of a gentleman who died with symptoms of this disease, whose heart was about three times the natural size, with its cavities

The first of these is the fact that the
 world is not a uniform whole, but a
 collection of many different parts, each
 of which has its own life and character.
 The second is that the world is not a
 static thing, but a living, growing
 organism, which is constantly changing
 and developing. The third is that the
 world is not a thing, but a process, a
 continuous flow of events and actions.
 The fourth is that the world is not a
 single entity, but a complex system of
 many interacting parts. The fifth is
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 complex system of many interacting
 parts.

much dilated.

Pathology. This appears to be rather an undecided point. Dr. Parry and some others thought it depended, for the most part, on an ossification of the coronary arteries; but I think this view of it objectionable, inasmuch as the disease has often been met with where dissections have shown no ossification of these arteries; and conversely, ossification has been found in cases where this disease had not existed.

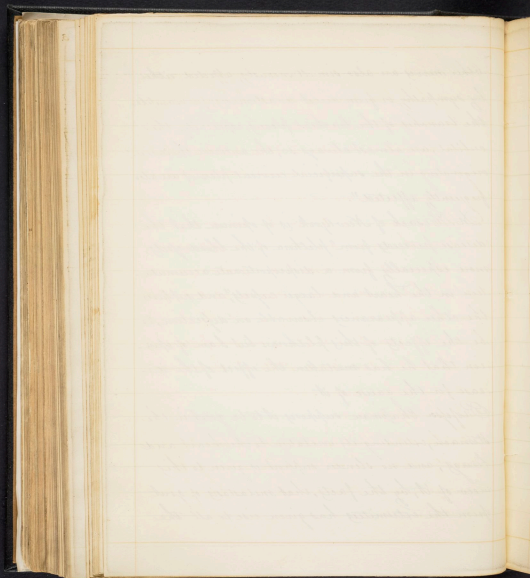
Laennec supposed it to be a nervous affection, which might have different situations. He says "when there exists at the same time, pain in the heart and lungs, we may presume that the affection is principally seated in the pneumo-gastric; on the other hand, when there is simply a sense of stricture of the heart, without pulmonary pain, or difficulty of breathing, we may consider its site to be in the nervous filaments which the heart receives from the grand sympathetic.

The first of these is the fact that the
 human mind is not a blank slate at birth.
 It is a tabula rasa, but it is not a
 completely empty one. It is filled with
 impressions from the world around it.
 These impressions are the raw material
 of thought. They are the seeds from
 which the mind grows. The mind is
 a garden, and the world is the source
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Other nerves are also simultaneously affected, either by sympathy or from direct anastomosis; for example, the branches of the brachial plexus, especially the cubital, are almost always so; the anterior thoracic originating in the superficial cervical plexus are also frequently affected".

Dr. Horwack of New York is of opinion that the disease proceeds from "plethora of the bloodvessels, more especially from a disproportionate accumulation in the heart and larger vessels," and suppresses the other appearances observable on dissection, to be the effects of this plethora: but I am of opinion that he has mistaken the effect of the disease for the cause of it.

Professor Chapman supposes it to be gout in the stomach, extending its irritation to the heart and lungs, and no slender support is given to this view of it, by the facts, that metastasis of gout from the extremities has given rise to all the



symptoms of angina pectoris; and conversely, angina pectoris has been entirely cured, by gout fixing on the extremities.

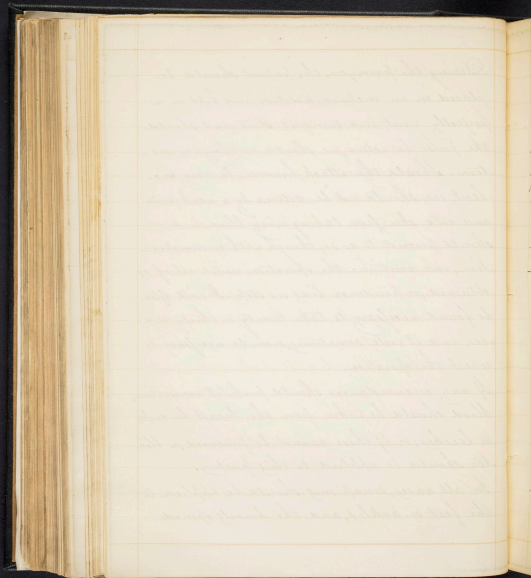
I am disposed, in a great measure, to adopt the views of Lacombe on this subject. I am of opinion that in cases where no apparent lesion of the heart has been found after death, the disease has been seated in the pneumo-gastric nerve, and that when the heart has exhibited organic arrangement, it has arisen from a disordered state of the nerves of that organ, coming principally from the cervical ganglions of the great sympathetic; and that this disordered state of the nerves frequently arises from gastric irritation, as gout or dyspepsia.

Treatment. This is obviously of two kinds; namely, that which is proper during the paroxysm, and that which is proper in the intervals.

During the paroxysm, the patient should be placed in an inclined position, and kept in a perfectly quiet and tranquil state; and should the pulse be active, we should employ venesection. Should the attack, however, be very violent, we should not be deterred by a weak pulse and cold skin, from taking away blood: but should proceed to do so, though with circumspection, and continue the operation until relief is obtained, or prudence bids us stop. It will often be found necessary to take twenty or thirty ounces, and it will sometimes, even be necessary to repeat the operation.

If any circumstances should prohibit venesection, blood should be taken from the breast by cups or leeches; or if these cannot be procured, a blister should be applied to this part.

In all cases, sinapisms should be applied to the feet or ankles, and the bowels opened.



with calomel and jalap, senna, or some other
purgative.

Some of the European practitioners, and especi-
ally Dr. Good, condemn the above practice alto-
gether; and after the operation of an emetic,
rely on antispasmodics; as opium, camphor, musk,
and ether, for the cure. But I believe the propri-
ety of the depletion plan is sufficiently establish-
ed, in this country, at least, though it is proper to
observe that in the incipient stages of the disease,
or where depletion has been resorted to, they often
exert a very beneficial influence.

Laennec has spoken highly of the efficacy of
magnetism, both during the paroxysm and in
the interval, though I think his trials of it were
not in themselves conclusive; as he practiced
bloodletting in conjunction with it. He appli-
ed "two strongly magnetized steel plates, of a
line in thickness, of an oval shape, and bent

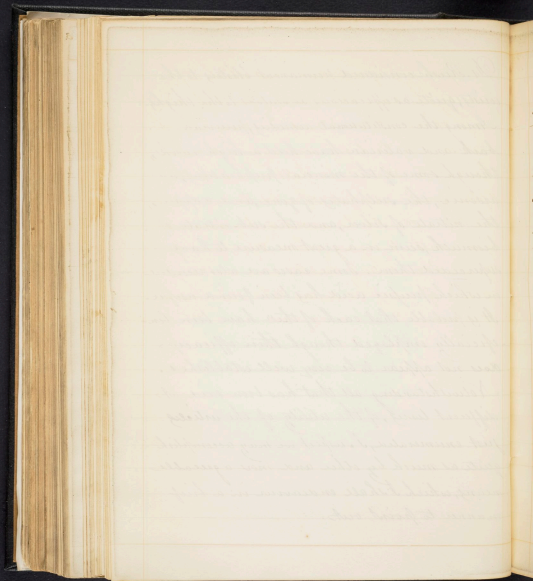
so as to fit the part, one to the left precordial region, and the other exactly opposite, on the back, in such a manner that the magnetic current shall traverse the affected part."

The remedies to be employed in the interval, for the purpose of eradicating the disease, are both topical and general.

In the utility of the former, or counter irritation, most practitioners seem to agree: and for this purpose, a perpetual blister to the breast has frequently been resorted to, though it is probable that a tartar emetic plaster, which is by some preferred, would be quite as efficacious, and more convenient.

McBride and Darwin have reported a number of cases which were cured by issues to the inside of the thigh, and there can be no doubt of their utility, especially when the disease is connected with suppressed discharges.

Dr. Rush considered permanent blisters to the
soles, quite as efficacious as seatons to the thighs.
Among the constitutional remedies, peruvian
bark and valerian have held a high rank,
though some of the mineral preparations, as
arsenic, the sulphates of zinc, and copper,
the nitrate of silver, and the sub-nitrate of
bismuth, seem in a great measure to have
superceeded them. Some cases are also recorded
in which prussic acid has been found useful.
It is probable that each of these have been ben-
eficially employed though their efficacy
does not appear to be very well established.
Notwithstanding all that has been said at
different times, of the utility of the articles
just enumerated, I suspect we may accomplish
quite as much by other and more agreeable
means, which I shall endeavour in a brief
manner to point out.



If symptoms of dyspepsia exist, which is frequently the case, the remedies for that disease should be employed. In every case the diet should be light and easy of digestion, the bowels should be kept in a soluble state, gentle exercise should be resorted to, plethora should be avoided by venesection and gentle purging, when symptoms of it occur; stimulating drinks and exciting causes of every kind, are to be sedulously avoided.

